Retrospective analysis of eelgrass (*Zostera marina* L.) abundance in small embayments within the San Juan Archipelago, Washington.

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Between 2001 and 2003, 14 ha (35 ac) of *Zostera marina* (eelgrass) disappeared from Westcott Bay, a small protected embayment in the San Juan Archipelago, Washington. This local extinction eliminated a documented Pacific herring spawning site and reduced the carrying capacity of the site for fish and wildlife. We hypothesized that similar losses occurred within other small embayments in the archipelago during this time period and initiated a retrospective study to determine if a history of decline could be detected. We selected 14 small embayments (including Westcott Bay) within the archipelago and imported aerial photographs from 1995 to 2004, acquired from UW and WDNR archives, into planimetrically accurate, orthophotographs for analysis in ArcView. Total area and patchiness were calculated. We also examined changes to the shoreline and adjacent watershed areas (e.g., piers, bulkheads, outfalls) within these embayments. We found that: (1) there was a trend of loss between 1995 and 2004; (2) aggregate losses within the selected embayments are greater than 25 ha (62 ac) and (3) patch fragmentation patterns may be a signal of population stability. We discuss this study in the context of ongoing inventory and monitoring efforts and demonstrate the benefit of retrospective analysis for other regions of Puget Sound.